

CLAIMS

1. Process for the surface treatment of an article containing crosslinked silicone, preferably selected from polyorganosiloxanes (POS) crosslinked by the 5 polyaddition of \equiv Si-H units onto \equiv Si-alkenyl (preferably \equiv Si-vinyl) units, in a silicone preparation comprising:

- at least one polyorganosiloxane (POS) A with \equiv Si-alkenyl (preferably \equiv Si-vinyl) units,
- at least one polyorganosiloxane (POS) B with \equiv Si-H units,
- 10 • at least one metal catalyst C, preferably based on platinum,
- optionally at least one POS resin D carrying \equiv Si-alkenyl (preferably \equiv Si-vinyl) units,
- optionally at least one crosslinking inhibitor E,
- optionally at least one adhesion promoter F,
- 15 • optionally at least one mineral filler G,
- optionally at least one functional additive H for imparting specific properties,

characterized in that:

- 20 ○ it consists essentially in spraying at least one plasma jet onto at least part of the silicone surface of said article,
- the plasma used is a homogeneous atmospheric plasma,
- and it is produced continuously by means of a plasma spraying apparatus comprising a rotating head having one or more plasma nozzles that are offset relative to the axis of rotation, each one being capable of generating a plasma jet whose axis is parallel to said axis 25 of rotation.

2. Process for the production of a crosslinked silicone article which has been treated by the process according to claim 1, characterized in that it comprises the 30 following essential steps:

- (I) forming a silicone element with a liquid silicone preparation as defined in claim 1;
- (II) crosslinking this liquid silicone preparation formed in step (I);
- (III) treating at least part of the crosslinked silicone surface with a

plasma;

- (IV) repeating steps (I) and (II).

3. Process according to claim 1 or 2, characterized in that the quantity of
5 plasma received by the silicone surface is such that the energy of said surface is
greater than 30 mN/m and preferably between 30 and more than 70 mN/m.

4. Process according to any one of claims 1 to 3, characterized in that the
article containing silicone includes a preferably flexible substrate and one or more
10 crosslinked silicone elements forming a monolayer or multilayer coating adhering
to the substrate.

5. Process according to any one of claims 1 to 4, characterized in that the
article containing silicone is a silicone mold or molded object.
15

6. Process for the assembly of articles containing crosslinked silicone
preferably selected from polyorganosiloxanes (POS) crosslinked by the
polyaddition of \equiv Si-H units onto \equiv Si-alkenyl (preferably \equiv Si-vinyl) units,
characterized in that at least one of the articles to be assembled is derived from the
20 process according to any one of claims 1 to 4, and in that said articles are
assembled using liquid adhesive which is applied to at least part of the treated
silicone surfaces.

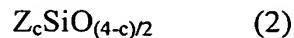
7. Process according to any one of claims 1 to 6 wherein the chosen POS A
25 have siloxy units of the formula:

$$W_a Z_b SiO_{(4-(a+b))/2} \quad (1)$$

in which:

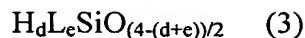
- the symbols W, which are identical or different, are each an alkenyl group and preferably a C₂-C₆ alkenyl;
- the symbols Z, which are identical or different, are each a non-hydrolyzable monovalent hydrocarbon group that is devoid of an unfavorable action on the activity of the catalyst, is optionally halogenated and is preferably selected from alkyl groups having from 1 to 8 carbon atoms inclusive, and from aryl groups;

- a is 1 or 2, b is 0, 1 or 2 and a + b is between 1 and 3;
- optionally at least some of the other units are units of the empirical formula



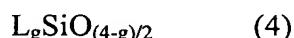
5 in which Z is as defined above and c has a value of between 0 and 3.

8. Process according to any one of claims 1 to 7 wherein the chosen POS B has siloxy units of the formula:



10 in which:

- the symbols L, which are identical or different, are each a non-hydrolyzable monovalent hydrocarbon group that is devoid of an unfavorable action on the activity of the catalyst, is optionally halogenated and is preferably selected from alkyl groups having from 1 to 8 carbon atoms inclusive, and from aryl groups;
- d is 1 or 2, e is 0, 1 or 2 and d + e has a value of between 1 and 3;
- optionally at least some of the other units being units of the empirical formula



20 in which L is as defined above and g has a value of between 0 and 3.

9. Process according to any one of claims 1 to 8, characterized in that the alkenyl groups W of the POS A and/or of the POS resins D are vinyl groups V_i carried by siloxy units D and optionally M and/or T.

25

10. Crosslinked silicone elastomer coating obtainable by the process according to any one of claims 1 to 4 and 6 to 9, characterized in that it has an adhesive strength, measured by a peel test T, greater than 2.7 N/cm, preferably greater than or equal to 2.8 N/cm and particularly preferably of between 3 and 10 N/cm.

Key to Figures

Fig. 1: DP = PD

Fig. 3: largeur = width

FEUILLE DE REMPLACEMENT (REGLE 26) = REPLACEMENT SHEET
(RULE 26)